Trend Study 15-3-99

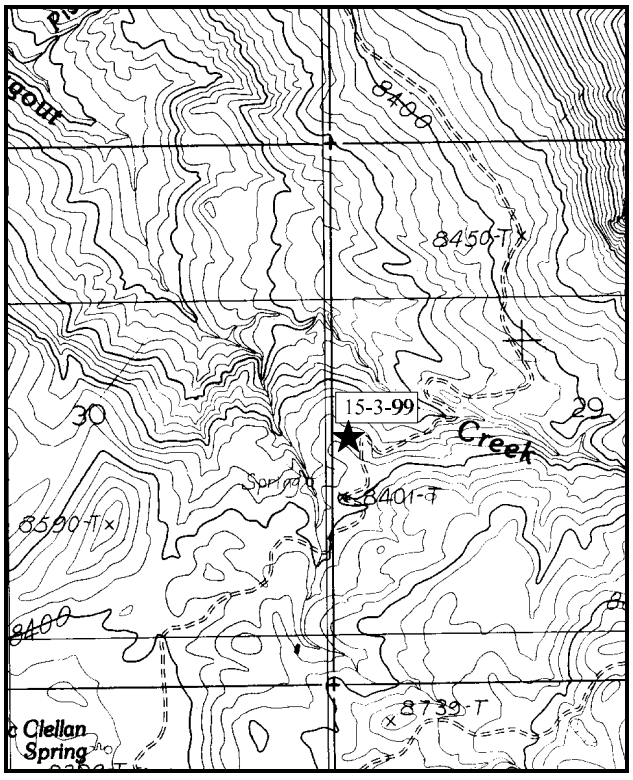
Study site name: Dugout . Range type: Mixed Mountain Brush .

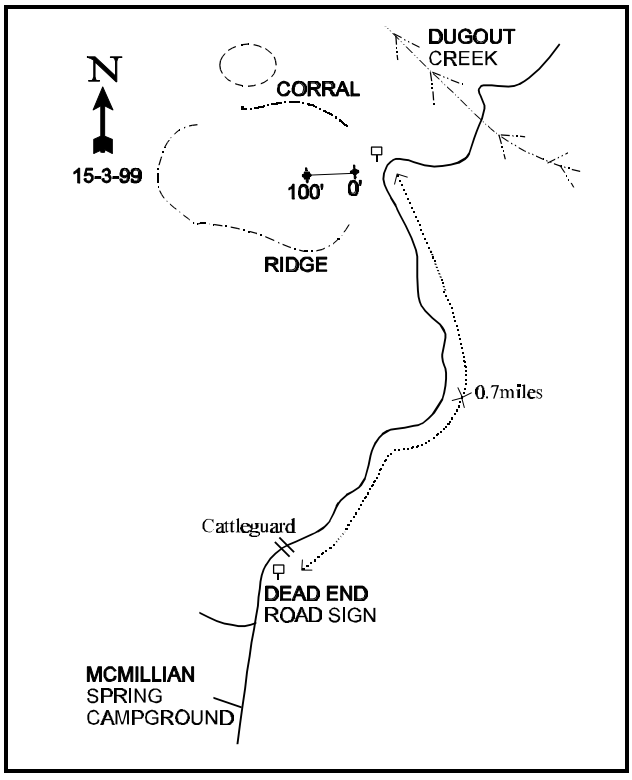
Compass bearing: frequency baseline 265°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From McMillian Spring campground, go north on the main road past the campsites and a 'Dead End Road' sign for 0.7 miles to a hairpin curve in the road at the top of a hill, just before it drops down towards Dugout Creek. The transect starts 50 feet off the left side of the road. The first stake, a short fence post, marks the 0-foot end of the frequency baseline and is tagged #7129.





Map Name: Mount Ellen Diagrammatic Sketch

Township 31S , Range 10E , Section 30 UTM 4214411.096 N, 514041.535 E

DISCUSSION

Trend Study No. 15-3 (38-3)

The Dugout study is located in a mountain brush range type with scattered pinyon and juniper. Black sagebrush and oakbrush dominate the site which is in a key area for mule deer. The site is located on a west aspect at an elevation of 8,300 feet. It has a variable slope ranging from 2-13%. Mean annual precipitation is at least 15 inches. Water is available for livestock and wildlife within a half mile of the study site which lies within the Nasty Flat Cattle Allotment. Pellet group data from 1999 indicate light use by wildlife and livestock with an estimated 15 deer and 6 cow days use/acre (37 ddu/ha and 15 cdu/ha).

The soils appear moderately deep with an estimated effective rooting depth of over 17 inches, although a restrictive layer must be present to support such a dense stand of black sagebrush. Rocks are prevalent on the soil surface and throughout the upper portion of the profile. The soil is a light brown, clay loam with a neutral pH (7.3). The fairly high clay content is evident by the amount of crusting in exposed areas, as well as cracks beginning to form during drying periods. Phosphorus levels (7.8 ppm) in the soil are slightly lower than the minimum of 10 ppm, thought necessary for normal plant development. There is some evidence of minimal surface water movement and soil pedestaling, however erosion is not severe on study area. Vegetative and litter cover, provided mainly by the shrub component, seems to be adequate to keep erosion at minimal levels. Organic matter buildup is high under the oakbrush, but low elsewhere. Some of the steep slopes surrounding the site show heavier erosion.

Black sagebrush and serviceberry are the key browse species in the area. Black sagebrush is the most abundant browse on the site with an estimated density of 4,999 plants/acre in 1987, 4,840 in 1994, and 5,020 by 1999. Utilization was mostly light in 1987 and 1994, with nearly one-third of the population showing moderate use by 1999. Percent decadency of black sagebrush has varied between years. Decadency increased from 29% in 1987 to 43% by 1994, then decreased to 33% in 1999. The proportion of decadent plants classified as dying also decreased between 1994 and 1999. Recruitment is good for this species with an estimated 800 young plants/acre (16% of the population) being sampled in 1999. The number of dead plants sampled was high in 1999 (1700 plants/acre), although dead plants were not sampled in previous years so comparisons should not be made. The extended drought is most likely causing population thinning and die-off of black sagebrush. Currently, mature sagebrush plants have abundant seed from the previous year. Serviceberry consists of mostly mature plants that have been moderately browsed. There was a large increase in the proportion of plants receiving heavier use between 1994 and 1999. However, vigor is good on the majority of the plants sampled and percent decadency is low, characterizing a healthy population.

Other browse sampled are true mountain mahogany and Gambel oak. Mountain mahogany is an important species, but because of it's low density at this site it isn't considered a key species. The majority of the plants over all sampling years have displayed moderate to heavy use because of low numbers. During the 1987 reading, 67% of the shrubs encountered displayed heavy hedging, while 33% showed poor vigor. In 1994, 45% of the mahogany were heavily hedged while those displaying poor vigor decreased from 33% to 9%. In 1999, 80% of plants sampled displayed moderate or heavy hedging, with 10% showing poor vigor. Gambel oak was quite abundant in 1987, but was mistakenly not counted in the shrub strips during the 1994 reading. In 1999, the density of oak was estimated at 2,500 stems/acre with most of these being classified as mature. Use is mostly light and vigor good. Pinyon pine is estimated at 176 trees/acre by point quarter data taken in 1999. Average stem diameter is 5 inches. Point quarter data also estimates Utah juniper and ponderosa pine at 21and 22 trees/acre respectively. Average stem diameter for juniper is less than 3 inches with ponderosa just over 3 inches. Canopy cover of pinyon was estimated at 23% in 1999.

Grasses and forbs are fairly diverse on the site, but none are particularly abundant. Six grass and thirty-one forb species were sampled in 1999 totaling 22% of the total vegetative cover. Nearly all of the herbaceous understory is perennial species. Mutton bluegrass is the most abundant grass on the site, followed by

squirreltail and Indian ricegrass. All species with the exception of mutton bluegrass provide less than 1% cover individually. No noticeable utilization was observed on any of the herbaceous species in 1999.

APPARENT TREND ASSESSMENT

In 1987, litter cover (58%) contributed substantially to total ground cover (88%). The low estimate for bare soil in 1987 of 12% is even lower in 1994 at only 7%. This would indicate that the site is well buffered from the erosive forces of wind and water.

1994 TREND ASSESSMENT

The soil trend appears stable with a decline in percent bare ground. Black sagebrush have shown an increase in percent decadency from 29% in 1987 to 43% by 1994. Utilization is light however, and age class analysis would indicate a stable population. The browse trend appears to be fairly stable at this time, but the rate of decadency should be monitored closely. The herbaceous understory follows the same trend as many sites on this unit. Sum of nested frequencies of grasses declined while those of forbs increased, but on this site the forbs make up 75% of the herbaceous cover. Nested frequencies of grasses and forbs combined have remained stable.

TREND ASSESSMENT
soil - stable
browse - stable
herbaceous understory - stable

1999 TREND ASSESSMENT

Trend for soil is stable. Although percent bare ground increased, protective ground cover provided by litter and vegetation, especially herbaceous species also increased. Trend for the key browse is stable. Black sagebrush density is stable, vigor good on most mature plants, decadency has decreased, and the proportion of decadent plants classified as dying has decreased. Recruitment from young plants is also good. Serviceberry, although showing moderate use, has good vigor, low decadency, and good recruitment from young plants. Herbaceous understory trend is stable. The understory is comprised almost solely of perennial species. Perennial sum of nested frequency for both grasses and forbs has increased since 1994.

TREND ASSESSMENT
soil - stable
browse - stable
herbaceous - stable

HERBACEOUS TRENDS --
Herd unit 15 , Study no: 3

Type	Species	Nested Frequency '87	'94	'99	Quadrat Frequency '87	'94	'99	Average Cover % '94	'99
G	Agropyron cristatum	$_{a}$-	$_{b}$12	$_{a}$-	-	4	-	.12	-
G	Agropyron intermedium	4	-	-	1	-	-	-	-
G	Agropyron smithii	$_{b}$20	$_{a}$-	$_{a}$-	10	-	-	-	-
G	Bouteloua gracilis	5	4	10	2	2	4	.03	.12
G	Bromus tectorum (a)	-	-	1	-	-	1	-	.00
G	Carex spp.	1	3	-	1	2	-	.01	-
G	Festuca spp.	$_{b}$29	$_{a}$-	$_{a}$-	11	-	-	-	-
G	Oryzopsis hymenoides	31	47	29	13	20	13	.51	.36
G	Poa fendleriana	54	63	94	27	24	38	1.24	1.77
G	Sitanion hystrix	$_{b}$55	$_{a}$19	$_{ab}$36	26	10	16	.19	.22
G	Stipa lettermani	18	16	11	10	7	4	.06	.04
Total for Annual Grasses		0	0	1	0	0	1	0	0.00
Total for Perennial Grasses		217	164	180	101	69	75	2.17	2.52
Total for Grasses		217	164	181	101	69	76	2.17	2.53
F	Agoseris glauca	$_{a}$-	$_{b}$9	$_{ab}$1	-	3	1	.01	.00
F	Allium spp.	$_{ab}$4	$_{a}$-	$_{b}$8	2	-	3	-	.30
F	Antennaria parvifolia	2	1	6	1	1	3	.03	.44
F	Androsace septentrionalis (a)	-	$_{a}$-	$_{b}$10	-	-	5	-	.02
F	Astragulus henrimontanensis	$_{b}$10	$_{a}$-	$_{c}$18	4	-	12	-	.45
F	Astragalus tenellus	$_{a}$8	$_{a}$3	$_{b}$27	4	2	16	.06	.30
F	Aster spp.	$_{b}$47	$_{b}$49	$_{a}$4	17	20	2	1.95	.01
F	Castilleja chromosa	12	18	16	7	7	9	.14	.09
F	Castilleja linariaefolia	6	3	3	3	1	1	.00	.01
F	Calochortus nuttallii	$_{b}$6	$_{a}$-	$_{c}$20	3	-	7	-	.08
F	Cirsium calcareum	-	-	1	-	-	1	-	.15
F	Comandra pallida	$_{ab}$18	$_{a}$10	$_{b}$23	6	4	9	.09	.78
F	Crepis intermedia	$_{ab}$13	$_{a}$4	$_{b}$23	5	2	9	.01	.39
F	Cymopterus purpureus	$_{ab}$56	$_{b}$56	$_{a}$42	27	31	22	.52	.39
F	Eriogonum alatum	-	-	5	-	-	4	-	.04
F	Erigeron pumilus	$_{a}$23	$_{b}$72	$_{a}$67	12	32	30	.90	.55
F	Eriogonum racemosum	$_{a}$-	$_{a}$-	$_{b}$5	-	-	3	-	.01
F	Grindelia squarrosa	-	1	-	-	1	-	.00	-
F	Hymenoxys acaulis	37	40	46	17	16	17	.59	.77
F	Hymenoxys richardsonii	$_{a}$-	$_{ab}$1	$_{b}$8	-	1	4	.00	.07
F	Lesquerella wardii	$_{b}$42	$_{a}$17	$_{ab}$34	21	9	17	.23	.30
F	Lupinus sericeus	19	21	15	9	11	8	.30	.09
F	Machaeranthera grindelioides	$_{b}$8	$_{a}$-	$_{b}$15	3	-	5	-	.19
F	Penstemon spp.	26	8	8	11	5	5	.02	.02

Type	Species	Nested Frequency '87	'94	'99	Quadrat Frequency '87	'94	'99	Average Cover % '94	'99
F	Petradoria pumila	$_{a}$1	$_{a}$4	$_{b}$12	1	2	9	.06	.09
F	Penstemon watsonii	$_{ab}$14	$_{b}$27	$_{a}$9	8	14	5	.81	.24
F	Physaria acutifolia	$_{a}$-	$_{b}$9	-	-	4	-	.02	-
F	Phlox longifolia	10	16	13	4	6	6	.08	.06
F	Polygonum douglasii (a)	-	$_{b}$23	$_{a}$-	-	9	-	.07	-
F	Potentilla gracilis	$_{a}$6	$_{a}$4	$_{b}$18	2	3	8	.01	.24
F	Senecio multilobatus	-	-	3	-	-	1	-	.00
F	Tragopogon dubius	-	-	3	-	-	1	-	.00
F	Unknown forb-perennial	3	2	-	1	2	-	.01	-
F	Viguiera multiflora	$_{a}$-	$_{a}$-	$_{b}$24	-	-	14	-	.71
F	Zigadenus paniculatus	$_{a}$-	$_{c}$28	$_{b}$6	-	11	3	.08	.01
Total for Annual Forbs		0	23	10	0	9	5	0.07	0.02
Total for Perennial Forbs		371	403	483	168	188	235	5.98	6.88
Total for Forbs		371	426	493	168	197	240	6.05	6.91

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --
Herd unit 15 , Study no: 3

Type	Species	Strip Frequency '94	'99	Average Cover % '94	'99
B	Amelanchier utahensis	23	25	4.15	4.57
B	Artemisia nova	79	82	8.59	6.06
B	Artemisia tridentata vaseyana	1	0	-	-
B	Cercocarpus montanus	10	10	1.79	2.08
B	Chrysothamnus depressus	5	6	.06	.18
B	Chrysothamnus nauseosus	0	0	-	-
B	Chrysothamnus viscidiflorus	1	0	-	-
B	Eriogonum corymbosum	0	0	-	-
B	Eriogonum microthecum	1	0	-	-
B	Gutierrezia sarothrae	3	0	.06	-
B	Juniperus osteosperma	0	2	.15	.76
B	Pinus edulis	0	13	5.52	11.11
B	Pinus ponderosa	-	-	.21	-
B	Quercus gambelii	0	32	4.49	7.80
B	Symphoricarpos oreophilus	11	2	.54	.03
Total for Browse		134	172	25.60	32.61

CANOPY COVER --
Herd unit 15 , Study no: 3

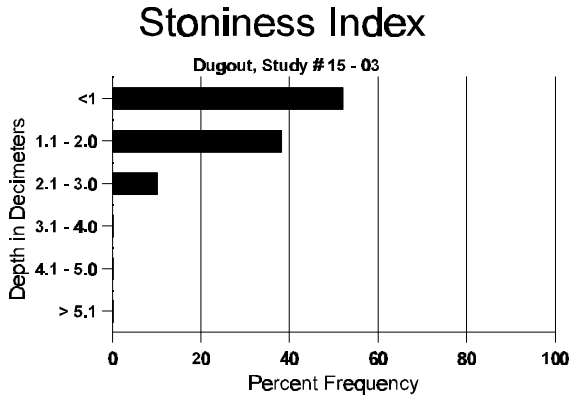
Species	Percent Cover '99
Pinus edulis	23

BASIC COVER --
Herd unit 15 , Study no: 3

Cover Type	Nested Frequency '94	'99	Average Cover % '87	'94	'99
Vegetation	282	286	3.75	32.83	36.99
Rock	245	229	13.50	14.13	14.43
Pavement	175	203	13.00	3.39	5.85
Litter	381	374	58.00	43.79	52.28
Cryptogams	9	51	.25	.88	.85
Bare Ground	183	190	11.50	7.15	14.32

SOIL ANALYSIS DATA --
Herd Unit 15, Study # 03, Study Name: Dugout

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
17.3	49.0 (18.1)	7.3	32.0	29.4	38.6	2.3	7.8	115.2	0.8



PELLET GROUP DATA --
Herd unit 15 , Study no: 3

Type	Quadrat Frequency '94	'99
Rabbit	3	22
Deer	8	9
Cattle	-	-

Pellet Transect Days Use/Acre (ha) '99
N/A
15 (37)
6 (15)

BROWSE CHARACTERISTICS --
Herd unit 15 , Study no: 3

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier utahensis																		
S	87	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	94	1	-	-	-	-	-	1	-	-	2	-	-	-	40			2
	99	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
Y	87	3	4	-	-	-	-	-	-	-	7	-	-	-	466			7
	94	1	-	-	3	-	-	-	-	-	4	-	-	-	80			4
	99	2	6	-	-	-	-	2	-	-	10	-	-	-	200			10
M	87	-	3	1	-	-	-	-	-	-	4	-	-	-	266	46	18	4
	94	16	2	-	3	-	-	-	-	-	19	1	1	-	420	40	37	21
	99	3	9	1	3	1	-	-	-	-	17	-	-	-	340	47	39	17
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	-	1	-	-	-	-	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	64%	09%	00%	-29%
'94	08%	00%	04%	+ 7%
'99	61%	04%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	732	Dec:		0%
'94	520			4%
'99	560			4%

Artemisia nova																		
S	87	27	-	-	-	-	-	-	-	-	27	-	-	-	1800			27
	94	65	-	8	-	-	-	19	-	-	92	-	-	-	1840			92
	99	23	-	-	-	-	-	-	-	-	23	-	-	-	460			23
Y	87	20	-	-	-	-	-	-	-	-	19	1	-	-	1333			20
	94	12	-	-	2	-	-	9	-	-	23	-	-	-	460			23
	99	29	4	-	7	-	-	-	-	-	40	-	-	-	800			40
M	87	24	7	2	-	-	-	-	-	-	33	-	-	-	2200	14	15	33
	94	82	8	12	12	-	-	1	-	-	105	8	-	2	2300	12	19	115
	99	57	48	6	16	-	-	2	-	-	129	-	-	-	2580	11	17	129
D	87	10	10	2	-	-	-	-	-	-	18	-	2	2	1466			22
	94	66	20	2	13	-	-	3	-	-	76	2	1	25	2080			104
	99	41	27	-	6	-	-	8	-	-	59	-	8	15	1640			82
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	1700			85

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	23%	05%	05%	- 3%
'94	12%	06%	12%	+ 4%
'99	31%	02%	09%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	4999	Dec:		29%
'94	4840			43%
'99	5020			33%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
M	87	1	-	-	-	-	-	-	-	-	1	-	-	-	66	15	23	1
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20	28	55	1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	-70%
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'87	66		-
	'94	20		-
	'99	0		-

Cercocarpus montanus																		
Y	87	-	-	1	-	-	-	-	-	-	-	-	1	-	66			1
	94	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	99	1	2	-	-	-	-	-	-	-	3	-	-	-	60			3
M	87	-	1	1	-	-	-	-	-	-	2	-	-	-	133	24	34	2
	94	1	1	5	-	-	-	2	-	-	9	-	-	-	180	27	38	9
	99	-	2	4	-	-	-	-	-	-	6	-	-	-	120	26	31	6
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	1	-	-	-	-	-	-	-	-	1	20			1
	99	-	-	-	-	-	-	1	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	33%	67%	33%	+10%
'94	09%	45%	09%	- 9%
'99	40%	40%	10%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'87	199		0%
	'94	220		9%
	'99	200		10%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus depressus																		
S	87	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	94	-	-	-	-	-	-	1	-	-	1	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	87	8	3	-	-	-	-	-	-	-	11	-	-	-	733	3	7	11
	94	4	-	2	-	-	-	-	-	-	6	-	-	-	120	3	7	6
	99	4	-	-	-	1	-	-	-	-	5	-	-	-	100	6	9	5
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	2	-	-	-	-	-	-	-	-	-	2	40			2
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	25%	00%	00%	-82%
'94	00%	29%	00%	+ 0%
'99	14%	29%	29%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	799	Dec:		0%
'94	140			0%
'99	140			29%

Chrysothamnus nauseosus																		
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	18	19	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'87	0	Dec:	-
'94	0		-
'99	0		-

Chrysothamnus viscidiflorus																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	1	-	-	-	-	-	1	-	-	-	20	18	16	1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'87	0	Dec:	-
'94	20		-
'99	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Eriogonum corymbosum																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	12	24	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	0	Dec:		-
'94	0			-
'99	0			-

Eriogonum microthecum																		
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	0	Dec:		-
'94	40			-
'99	0			-

Gutierrezia sarothrae																		
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60	8	10	3
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	0	Dec:		-
'94	60			-
'99	0			-

Juniperus osteosperma																		
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	0	Dec:		-
'94	0			-
'99	40			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pinus edulis																		
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	1	-	-	8	-	-	11	-	-	-	220			11
Y	87	2	-	-	-	-	-	-	-	-	1	-	-	1	133			2
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	6	-	-	2	-	-	-	-	-	8	-	-	-	160			8
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	3	-	-	1	-	-	1	-	-	5	-	-	-	100	-	-	5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'87	00%	00%	50%
'94	00%	00%	00%
'99	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	133	Dec:	-
	'94	0		-
	'99	260		-

Quercus gambelii																		
S	87	19	-	-	-	-	-	-	-	-	19	-	-	-	1266			19
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	3	-	-	-	-	-	3	-	-	6	-	-	-	120			6
Y	87	58	5	-	-	-	-	-	-	-	63	-	-	-	4200			63
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	5	-	-	20	-	-	3	-	-	28	-	-	-	560			28
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	79	2	-	15	-	-	-	-	-	95	-	-	1	1920	36	29	96
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	1	-	-	-	-	-	-	-	-	-	-	1	20			1
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'87	08%	00%	00%
'94	00%	00%	00%
'99	02%	00%	02%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	4200	Dec:	0%
	'94	0		0%
	'99	2500		1%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Symphoricarpos oreophilus																		
Y	87	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	94	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
M	87	3	3	-	-	-	-	-	-	-	6	-	-	-	400	17	23	6
	94	3	-	-	6	-	-	1	-	-	10	-	-	-	200	12	22	10
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	13	27	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	33%	00%	00%	-53%
'94	00%	00%	00%	-64%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	600	Dec:	-
	'94	280		-
	'99	100		-